## *AMENDMENTS TO THE DRAWINGS*

A **Replacement Sheet** for Sheet 2 of the drawings as originally filed is included herewith as **APPENDIX A**. The changes in the **Replacement Sheet** include the addition of the legend "PRIOR ART." This change is made to address the objection to the drawings raised for the first time in the 10/2/2006 Office Action.

## *REMARKS*

By this paper, no claims have been amended, added, or cancelled. Accordingly, claims 1-24 are all of the pending claims. Claims 4-8 and 11-13 are currently withdrawn from consideration. In view of the following remarks, reconsideration and allowance of all the pending claims is anticipated.

### *Objections to the Drawings*

The drawings have been objected to on the grounds that FIG. 3B should be designated by a legend such as –Prior Art--. In light of the amendments to the drawings presented above, Applicant believes that this objection is moot.

### *Rejections Based On Orino and Inoue*

The 10/2/2006 Office Action maintains the rejection of claims 1-3, 9, 10, 14, and 17-20 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2003/0020892 to Orino ("Orino") in view of U.S. Patent No. 5,673,103 to Inoue *et al.* ("Inoue"). Applicant traverses the rejections at least because the cited portions of Orino and Inoue do not disclose, teach or suggest the claimed invention.

I. Claims 1-3, 9, 10, 14, 17, and 19-21

As Applicant argued at length in the Response filed September 14, 2006 ("the 9/14/2006 Response"), the cited portions of Orino and Inoue, alone or in combination, do not disclose, teach, or suggest all of the features of the claimed invention of claims 1-3, 9, 10, 14, 17, and 19-21. For example, the cited portions of Orino and Inoue do not disclose, teach or suggest "**at least one pupil shaping element constructed and arranged to define an on-axis, substantially rectilinear intensity distribution on the beam at a pupil plane of the illumination system; and a polarizer constructed and arranged to impart a linear polarization to the beam**," as is recited by claim 1. Further, for example, the cited portions of Orino and Inoue do not disclose, teach or suggest "**processing a beam of radiation such that an intensity distribution of the beam at a pupil plane of an illumination system of a lithographic apparatus comprises an on-axis rectilinear intensity distribution and linearly polarizing said beam**," as is recited by claim 19.

The 10/2/2006 Office Action incorrectly maintains that masking blade 160 of Orino corresponds to the pupil shaping element of the claimed invention. *See* the 10/2/2006 Office Action, page 5. Applicant has pointed out previously that, among other deficiencies, the masking blade 160 is arranged to define an illumination field at an image/object plane as noted in Orino: "[the illumination apparatus of Orino] arranges an exposure plane on the wafer, a pattern plane on the mask, and a plane of the masking blade 160A in a conjugate relationship." In the face of these facts, the 10/2/2006 Office Action asserts that the masking blade 160 is disposed at a pupil plane that is denoted "by the crossing of solid lines within the masking blade 160" in FIG. 1 of Orino (which is presented for convenience below). *See*, the 10/2/2006 Office Action, page 2.

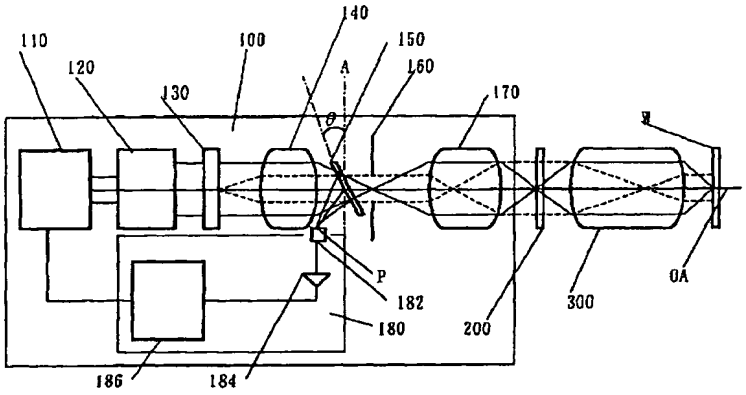


FIG. 1

The 10/2/2006 Office Action's statement that the point of convergence of solid lines at masking blade 160 shown in FIG. 1 denotes a pupil plane located within the aperture of the masking blade 160, however, ignores the fact that there are other lines denoting illumination radiation (the dashed lines) that do not converge within the aperture of the masking blade 160. Just because solid ray lines converge at a point does not mean the location of that convergence is in a pupil plane of an illumination system. Indeed, Orino explicitly teaches that the fly-eye lens 130 and the condensing lens 140 light the masking blade 160 with Koehler-illumination. *See*, *e.g.*, Orino, paragraph 0037. Therefore, the masking blade 160 of Orino does not "define an... intensity distribution on the beam at a pupil plane of the illumination system." In

further support of this, Applicant would note that the solid lines in FIG. 1 of Orino also converge at the mask 200 and plate W confirming that the solid lines converge at an image/object plane, not a pupil plane of an illumination system. The 10/2/2006 Office Action also refers to the convergence of the dashed lines in lens 170 in FIG. 1 of Orino. However, the 10/2/2006 Office Action does not assert that lens 170 corresponds to the claimed pupil shaping element and indeed Applicant submits the lens 170 is not configured to define a substantially rectilinear intensity distribution. For at least these reasons, the rejection of claims 1 and 19 based on the cited portions of Orino and Inoue are improper and should be withdrawn.

Moreover, the 10/2/2006 Office Action admits that Orino does not teach or suggest a polarizer that linearly polarizes the beam. *See* the 10/2/2006 Office Action, page 5. Nevertheless, the 10/2/2006 Office Action states that there is a "suggestion of...using polarized light...at paragraph [0031], line 7" of Orino. Applicant respectfully disagrees. That cited portion merely discloses using an incoherent laser beam (rather than a coherent laser beam from a conventional laser source) in the lithographic apparatus and then discloses an apparatus to create such an incoherent beam from a coherent beam by providing an optical path difference between two beam components of such a beam (e.g., p and s polarized components) and then merging the beam back into a single incoherent beam. Respectfully, that does not disclose, teach or suggest using a polarized radiation beam in the lithographic apparatus. Rather, it merely suggests using an incoherent beam.

Even if the 10/2/2006 Office Action assertions that Orino teaches a pupil shaping element as claimed (which Applicant expressly disagrees with as discussed) and that Inoue suggests the implementation of a polarizer to impart a linear polarization to a beam are correct, Applicant submits that the 10/2/2006 Office Action has not articulated a reasoned basis for the combination of Orino and Inoue. The assertion that a person skilled in the art would form this combination "to obtain a substantially higher intensity beam" is improper and factually inaccurate. *See* the 9/14/2006 Response, pages 9 and 10. The 10/2/2006 Office Action now counters Applicant's argument by asserting that "a polarizer as taught by Inoue would vary the intensity of a beam within a given range from low to high. This is the manner of the interpretation of obtaining a substantially higher intensity beam." The 10/2/2006

Office Action, page 2. Even if the cited portions of Inoue suggested a linear polarizer that enabled a configurable amount of illumination to pass therethrough (which it does not disclose - there is no disclosure that the amount of radiation is variable), the polarization would not increase the intensity of the beam as it were prior to polarization, but would merely increase the relative intensity of the polarized beam at different settings.

The 10/2/2006 Office Action further alleges that the implementation of the polarizer of Inoue in the system of Orino would have been obvious to "promote the development of achieving an image of a high resolution as taught in prior art." *See* the 10/2/2006 Office Action, page 2. Respectfully, that does not provide a reasoned basis for the combination of Inoue and Orino. Specifically, the 10/2/2006 Office Action has not identified any specific teaching or suggestion in the prior art to combine these features – for example, the 10/2/2006 Office Action has not identified any teaching in the cited references about including a linear polarizer in the system of Orino to achieve an image of high resolution. Indeed, Applicant submits there is no such suggestion or teaching as neither Orino or Inoue has a hint of suggestion or teaching as to what the other lacks to form the claimed combination. Moreover, each of Orino and Inoue already "promote the development of achieving an image of a high resolution." Therefore, the Office Action's assertion does not advance the reasoning to combine Orino and Inoue. The Office Action's hindsight assertion simply does not identify how or why the disparate teachings of Orino and Inoue should be combined to yield the claimed invention.

For similar reasons, Applicant submits that Orino and Inoue fail to disclose, teach or suggest claim 19. For example, Orino fails to disclose, teach or suggest processing a beam of radiation such that an intensity distribution of the beam at a pupil plane of an illumination system of a lithographic apparatus comprises an on-axis rectilinear intensity distribution and fails to disclose, teach and suggest linearly polarizing said beam. Moreover, even if the 10/2/2006 Office Action assertions that Orino teaches the processing of a beam as claimed (which Applicant expressly disagrees with as discussed) and that Inoue suggests linearly polarizing a beam are correct, Applicant submits that the 10/2/2006 Office Action has not articulated a reasoned basis for the combination of Orino and Inoue.

For at least these reasons the rejection of claims 1 and 19 based on the cited portions of Orino and Inoue relied on by the 10/2/2006 Office Action should be withdrawn. Further, claims 2-3, 9, 10, 14, 17, and 20-21 depend from corresponding ones of claims 1 and 19. Therefore, the rejection of claims 2-3, 9, 10, 14, 17, and 20-21 should be withdrawn based on their dependency as well as for the features that they recite individually.

II. Claim 18

The cited portions of Orino and Inoue, alone or in combination, do not disclose, teach, or suggest all of the features of the claimed invention of claim 18. For example, the cited portions of Orino and Inoue do not disclose, teach or suggest "**at least one pupil shaping element constructed and arranged to impart an intensity distribution that is not symmetric in an interchange of two orthogonal axes at a pupil plane of the illumination system; and a polarizer configured to impart a linear polarization to the beam**," as is recited in claim 18.

As noted above, Applicant respectfully submits that the masking blade 160 of Orino is not configured to define an on-axis, substantially rectilinear intensity distribution on the beam at a pupil plane of the illumination system. Further, as discussed above, even if the 10/2/2006 Office Action is correct in maintaining that Orino teaches a pupil shaping element as claimed (which Applicant expressly disagrees with as discussed) and Inoue suggests the implementation of a polarizer to impart a linear polarization to a beam, Applicant submits that the 10/2/2006 Office Action has not made a proper showing to combine these aspects from Inoue and/or Orino as discussed above.

For at least these reasons the rejection of claim 18 based on the cited portions of Orino and Inoue relied upon by the 10/2/2006 Office Action should be withdrawn. Further, claims 22-24 depend from claim 18. Therefore, the rejection of claims 22-24 should be withdrawn based on their dependency as well as for the features that they recite individually.

***Rejections Based On Orino, Inoue, and Nishi***

The 10/2/2006 Office Action has also maintained the rejection of claim 15 under 35 U.S.C. §103(a) as allegedly being unpatentable over Orino in view of

Inoue, and in further view of U.S. Patent 6,608,665 to Nishi ("Nishi"). Applicant traverses this rejection at least because Orino, Inoue, and Nishi do not disclose, teach or suggest the claimed invention of claim 15.

Claim 15 depends from claim 1 and as discussed above the cited portions of Orino and Inoue fail to disclose, teach or suggest claim 1. The cited passages of Nishi do not address the deficiencies of Orino and Inoue with respect to the subject matter of claim 1 addressed above. Rather, Nishi is merely cited to disclose apertures. Therefore, the rejection of claim 15 should be withdrawn based on its dependency as well as for the features that it recites individually.

***Rejections based on Orino, Inoue, and Onanian***

The 10/2/2006 Office Action has maintained the rejection of claim 16 under 35 U.S.C. §103(a) as allegedly being unpatentable over Orino in view of Inoue, and in further view of U.S. Patent 4,568,148 to Onanian ("Onanian"). Applicant traverses this rejection at least because Orino, Inoue, and Onanian do not disclose, teach or suggest the claimed invention of claim 16.

Claim 16 depends from claim 1 and as discussed above the cited portions of Orino and Inoue fail to disclose, teach or suggest claim 1. The cited passages of Onanian do not address the deficiencies of Orino and Inoue with respect to the subject matter of claim 1 addressed above. Oranian is merely cited to disclose a polarizer mounted in an aperture of a diaphragm. Therefore, the rejection of claim 16 should be withdrawn based on its dependency as well as for the features that it recites individually.

## *CONCLUSION*

Having addressed each of the foregoing rejections and objections, it is respectfully submitted that a full and complete response has been made to the 10/2/2006 Office Action and, as such, the application is in condition for allowance. Notice to that effect is anticipated.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Date: January 10, 2007

Respectfully submitted,

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# APPENDIX A